Rousettus aegyptiacus – Egyptian Fruit Bat

Merlin Tuttle

Regional Red List status (2016)	**Least Concern***
National Red List status (2004)	Least Concern
Reasons for change	None
Global Red List status (2016)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing	None
Endemic	No

*Watch-list Threat

The Egyptian Fruit Bat was originally described from a specimen from the Great Pyramid of Giza in Egypt – hence its name (Skinner & Chimimba 2005).

Taxonomy

Rousettus aegyptiacus (E. Geoffroy Saint-Hilaire 1810)

ANIMALIA - CHORDATA - MAMMALIA - CHIROPTERA - PTEROPODIDAE - *Rousettus* - *aegyptiacus*

Synonyms: *arabicus, egyptiacus, geoffroyi, hottentotus, leachii, occidentalis, princeps, sjostedti, thomensis, tomensis, unicolor*

Common names: Egyptian Fruit Bat, Egyptian Rousette, Egyptian Rousette (English)

Taxonomic status: Species

Taxonomic notes: The taxonomic relationship with *Rousettus leschenaultii* requires further review. Two geographically isolated subspecies of *R. aegyptiacus* occur in sub-Saharan Africa (Monadjem et al. 2010). Both subspecies occur in the southern African region: *unicolor* (Gray 1870) in Angola and *leachii* (A. Smith 1829) in the rest of the region (Monadjem et al. 2010). There are two additional subspecies: *princeps* is endemic to Principe Island in the Gulf of Guinea and *tomensis* is endemic to Sao Tome (Korine 2016).

Assessment Rationale

This species is widely distributed and abundant within the assessment region (estimated extent of occurrence is 822,422 km^2), occurs in multiple protected areas (including Kruger National Park), and can occur in modified habitats. There are no major identified threats that could cause significant population decline and thus we list as Least Concern. However, as this species is dependent on caves for roosting in large numbers, protecting key cave roosts is an important intervention. Additionally, the recent increase in wind farms across the eastern part of the assessment region, where this species occurs, may represent a significant emerging threat. As such, monitoring fatalities from wind turbines, documenting disruptions to migration routes and analysing subsequent impacts on population size and trend is required as these data may necessitate reassessment.

Regional population effects: Wing-loading very high (Norberg & Rayner 1987), so dispersal capacity is good. Due to its patchy distribution, however, rescue effects are questionable.

Distribution

This species has a disjunct distribution in Africa, restricted to areas with fruiting trees and caves, but there are records in all biotic zones, except Mediterranean Coastal and Sahel Savannah. It is patchily distributed across sub-Saharan Africa and North Africa; also ranges outside of Africa through southwest Asia to Iran and Pakistan; and also on Cyprus (Benda et al. 2004). It occurs from sea level to ~4,000 m above sea level. The subspecies *R. a. leachii* is found in in Ethiopia, Sudan, Democratic Republic of the Congo (DRC), Uganda, Kenya, Tanzania, Zambia, Malawi, Zimbabwe, Mozambique, and the east and south of South Africa. Although Korine (2016) states that the species occurs in both Swaziland and Lesotho, there are no available records to support this. For example, while there is a tentative record from close to the Lesotho border (ACR 2015), neither Swaziland or Lesotho have voucher specimens for the species (ACR 2015). Similarly, Skinner and Chimimba (2005) state the species is absent from Lesotho and Swaziland, and Monadjem et al. (2010) state there is a gap in its distribution in Swaziland and southern Mozambique, with records reappearing in northern South Africa, through Zimbabwe, northern Mozambique, southern Zambia, Malawi and the southern DRC. The subspecies, *R. a. unicolor* occurs in western Angola northwards through western DRC, Gabon, Cameroon, Nigeria, Ghana, Togo, Côte d'Ivoire, Liberia, Senegal and the Gambia (Korine 2016).

Within the assessment region, *R. a. leachii* occurs from Cape Town, east and north along the coast to KwaZulu-Natal (Monadjem et al. 2010) through to Mpumalanga and Limpopo (Skinner & Chimimba 2005). It occurs in the moist, well-watered eastern parts of the region, but is absent from the dry west; which is possibly an indication of its reliance on fruiting trees (Jacobsen & du Plessis

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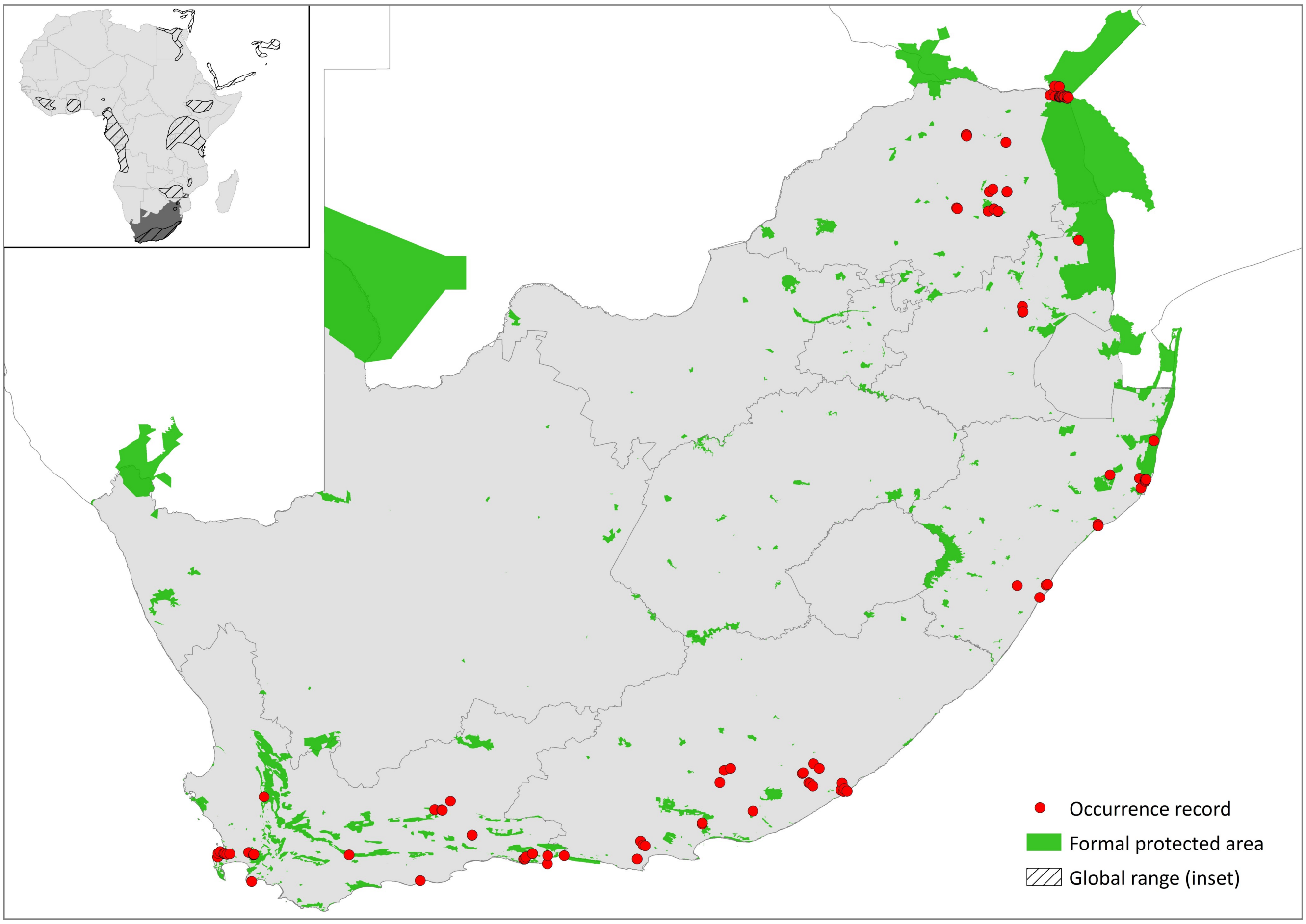

Figure 1. Distribution records for Egyptian Fruit Bat (*Rousettus aegyptiacus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Absent	-
Lesotho	Absent	-
Mozambique	Extant	Native
Namibia	Absent	-
South Africa	Extant	Native
Swaziland	Absent	-
Zimbabwe	Extant	Native

1976; Monadjem et al. 2010). The type locality of *R. a. leachii* is from the Company Gardens, Cape Town (Monadjem et al. 2010). The estimated extent of occurrence is 822,422 km^2.

Population

Common and sometimes abundant near large caves. In Africa, it occurs in large colonies of up to 50,000 individuals (ACR 2015). This species is well represented in museums, with more than 200 specimens examined in Monadjem et al. (2010). Within the assessment region, only a few colonies have been counted, which range from small colonies of 15 individuals to colonies of 12,000 individuals. Abundance seems to vary greatly between seasons. For example, in the Mission Rocks caves in the Greater St Lucia Wetland Park, numbers fluctuate from over 5,000 to fewer than 300 in summer (Monadjem et al. 2010). Conversely, in caves in the Tzaneen area of Limpopo, numbers reached over 9,000 individuals at the Matlapitsi cave in March–April (late wet season) and declined to just over 3,000 individuals in June–August (winter) (Jacobsen & du Plessis 1976), which suggests some movement between the two subpopulations. Indeed, a bat recorded in the Tzaneen area was subsequently recovered 500 km away at Cape Vidal in northern KwaZulu-Natal (Jacobsen & du Plessis 1976).

Current population trend: Stable

Continuing decline in mature individuals: No

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: < 12,000

Number of subpopulations: Unknown

Severely fragmented: No

Habitats and Ecology

This species has a broad habitat tolerance and is found in arid to moist tropical and subtropical biomes, so long as fruiting trees and appropriate roosting caves are available. It feeds on soft fruits (date, carob, mulberry, azedarach, fig, apricot, peach, mango and apple), flowers and occasionally eats leaves. They often forage in orchards, such as *Litchi chinensis* (Jacobsen and du Plessis 1976). Other fruits recorded in its diet include *Syzygium* spp., *Harpephyllum caffrum*, *Ekebergia capensis*, *Prunus africana* and *Diospyros senensis* (Jacobsen & du Plessis 1976; Herzig-Straschil & Robinson 1978; Thomas &

Table 2. Threats to the Egyptian Fruit Bat (*Rousettus aegyptiacus*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

Rank	Threat description	Evidence in the scientific literature	Data quality	Scale of study	Current trend
1	*6.1 Recreational Activities:* roost site disturbance from traditional ceremonies and tourism.	-	Anecdotal	-	Unknown
2	*3.3 Renewable Energy*: mortality by barotrauma or direct collision with turbine blades at wind turbines.	Baerwald et al. 2008	Empirical	International	Increasing
		Rydell et al. 2010	Empirical	International	
		MacEwan 2016	Empirical	National	
3	*11.1 Habitat Shifting & Alteration*: habitat degradation and migration disruption from climate change.	Sherwin et al. 2013	Review	International	Increasing
4	*5.1.3 Hunting & Trapping Terrestrial Animals*: persecution for fruit crop damage.	Jacobsen & du Plessis 1976	Empirical	Regional	Unknown

Fenton 1978). In Cape Town, Barclay et al. (2006) observed this species deliberately feeding on Scarabid beetles (*Pachnoda sinuata*).

It is a strictly cavernicolous species (Herzig-Straschil & Robinson 1978); roosting in moist natural caverns and artificial structures including underground irrigation tunnels (ghanats), ruins, mines, and open wells. The species often roosts with other bat species, such as *Miniopterus natalensis*, *Rhinolophus capensis*, *M. fraterculus* and possibly *R. clivosus* (ACR 2015). The presence of caves is suspected to influence their distribution more than vegetation associations (Monadjem et al. 2010). They are gregarious and roost in large numbers. They also migrate over hundreds of kilometres (Monadjem et al. 2010). Additionally, species of this genus do echolocate, making *Rousettus* an exception among fruit bats, and this species produces the sound by repetitive tongue clicks (Monadjem et al. 2010).

Ecosystem and cultural services: As this species is frugivorous; they play a crucial role in seed dispersal and pollination of many species (Herzig-Straschil & Robinson 1978; Monadjem et al. 2010; Kunz et al. 2011). This species has been recorded to pollinate Baobab Trees (*Adansonia digitata*) (Herzig-Straschil & Robinson 1978) and disperse the seeds of *Ficus* spp. (ACR 2015), which are economically important trees in the African savannah.

Use and Trade

There is no evidence to suggest that this species is traded or utilised within the assessment region. However, it is hunted for food in some cave systems in Africa (Korine 2016).

Threats

This species currently has no major identified threats. Cave disturbance may be a significant local threat. Similarly, persecution is a problem in parts of its range. For example, this species has been shown to cause damage to litchi orchards in South Africa (Jacobsen & du Plessis 1976), which may result in localised persecution. Additionally, with the rapid increase in the number of wind energy facilities developing in areas close to roost sites, wind energy infrastructure is a serious threat to this species (Baerwald et al. 2008; Cryan & Barclay 2009; Rydell et al. 2010; MacEwan 2016). Wind turbine-related fatality has already been recorded (MacEwan 2016). The impact that these threats will have on the overall population in the assessment region is currently unknown and the species needs to be monitored especially in relation to mortalities from wind turbines. Furthermore, its dependency on fruit-bearing trees and long-distance dispersal habits makes this species vulnerable to shifts in habitats and environmental gradients associated with climate change (Sherwin et al. 2013).

Current habitat trend: Stable.

Table 3. Conservation interventions for the Egyptian Fruit Bat (*Rousettus aegyptiacus*) ranked in order of effectiveness with corresponding evidence (based on IUCN action categories, with regional context)

Rank	Intervention description	Evidence in the scientific literature	Data quality	Scale of evidence	Demonstrated impact	Current conservation projects
1	*1.1 Site/Area Protection*: identify key roost sites for protection.	-	Anecdotal	-	-	-
2	*2.1 Site/Area Management*: manage wind turbines to reduce bat mortality.	Berthinussen et al. 2010	Empirical	Review	Bat mortalities lowered using ultrasonic deterrents and turbine curtailment during low wind speed.	-
		Arnett et al. 2011	Empirical	International		
3	*4.3 Awareness & Communications*: public education campaigns to mitigate disturbance to key roost sites.	-	Anecdotal	-	-	Bat Interest Groups

Conservation

This species is present in a number of protected areas including: Kruger National Park, Legalameetse Nature Reserve, iSimangaliso Wetland Park, Hluhluwe-iMfolozi Park, Umlazi Nature Reserve, Addo Elephant National Park, Wolkberg Nature Reserve, Garden Route National Park, Keurboomrivier Nature Reserve, Kogelberg National Park, Gamkapoort Nature Reserve, Geelkrans Provincial Nature Reserve, Marloth Nature Reserve, Grootwinterhoek Wilderness Area, Jonkershoek Nature Reserve and Table Mountain National Park. No direct conservation measures are currently needed for this species as a whole. However, identification of key roost sites and subsequent protected area expansion in areas suffering from habitat loss would benefit this species. Additionally, the impact of wind farming should also be monitored to determine resultant population decline. To mitigate mortalities from turbine collisions on wind farms, interventions such as using ultrasound to deter bats and curtailing turbines at low wind speeds could be employed (Baerwald et al. 2008; Berthinussen et al. 2010; Arnett et al. 2011).

Recommendations for land managers and practitioners:

- Data sharing by wind farm managers into a national database to be able to calculate cumulative impacts and thereafter implement collaborative mitigation and management efforts is needed.

Research priorities:

- The taxonomic relationship with *R. leschenaultii* requires further review.
- Identification of key roost sites and systematic monitoring to determine subpopulation trends.
- Monitoring mortalities linked with wind farms operations and assessing impact on populations.
- Investigations into effective mitigation methods to reduce bat mortality around wind farms.

Encouraged citizen actions:

- Citizens can assist the conservation of the species by reporting sightings on virtual museum platforms (for example, iSpot and MammalMAP), and therefore contribute to an understanding of the species distribution.

Data Sources and Quality

Table 4. Information and interpretation qualifiers for the Egyptian Fruit Bat (*Rousettus aegyptiacus*) assessment

Data sources	Field study (literature, unpublished), indirect information (literature), museum records
Data quality (max)	Estimated
Data quality (min)	Inferred
Uncertainty resolution	Best estimate
Risk tolerance	Evidentiary

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology.*

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